

$\eta_c(1S)$

$I^G(J^{PC}) = 0^+(0^{-+})$

$\eta_c(1S)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2979.8 ± 1.2 OUR AVERAGE		Error includes scale factor of 1.6.		See the ideogram below.
2970 ± 5 ± 6	501	¹ ABE	07 BELL	$e^+ e^- \rightarrow J/\psi(c\bar{c})$
2971 ± 3 ± 2	195	WU	06 BELL	$B^+ \rightarrow p\bar{p}K^+$
2974 ± 7 ± 2	20	WU	06 BELL	$B^+ \rightarrow \Lambda\bar{\Lambda}K^+$
2981.8 ± 1.3 ± 1.5	592	ASNER	04 CLEO	$\gamma\gamma \rightarrow \eta_c \rightarrow K_S^0 K^\pm \pi^\mp$
2982.5 ± 1.1 ± 0.9	2547 ± 90	AUBERT	04D BABR	$\gamma\gamma \rightarrow \eta_c(1S) \rightarrow K\bar{K}\pi$
2984.1 ± 2.1 ± 1.0	190	² AMBROGIANI	03 E835	$\bar{p}p \rightarrow \eta_c \rightarrow \gamma\gamma$
2977.5 ± 1.0 ± 1.2		³ BAI	03 BES	$J/\psi \rightarrow \gamma\eta_c$
2979.6 ± 2.3 ± 1.6	182 ± 25	FANG	03 BELL	$B \rightarrow \eta_c K$
2976.3 ± 2.3 ± 1.2		^{4,5,6} BAI	00F BES	$J/\psi \rightarrow \gamma\eta_c$ and $\psi(2S) \rightarrow \gamma\eta_c$
2969 ± 4 ± 4	80	BAI	90B MRK3	$J/\psi \rightarrow \gamma K^+ K^- K^+ K^-$
2984 ± 2.3 ± 4.0		GAISER	86 CBAL	$J/\psi \rightarrow \gamma X, \psi(2S) \rightarrow \gamma X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2982 ± 5	273 ± 43	⁷ AUBERT	06E BABR	$B^\pm \rightarrow K^\pm X_{c\bar{c}}$
2976.6 ± 2.9 ± 1.3	140	^{4,5} BAI	00F BES	$J/\psi \rightarrow \gamma\eta_c$
2980.4 ± 2.3 ± 0.6		⁸ BRANDENB...	00B CLE2	$\gamma\gamma \rightarrow \eta_c \rightarrow K^\pm K_S^0 \pi^\mp$
2975.8 ± 3.9 ± 1.2		^{4,5} BAI	99B BES	Sup. by BAI 00F
2999 ± 8	25	ABREU	980 DLPH	$e^+ e^- \rightarrow e^+ e^- + \text{hadrons}$
2988.3 ± 3.3		ARMSTRONG	95F E760	$\bar{p}p \rightarrow \gamma\gamma$
2974.4 ± 1.9		⁴ BISELLO	91 DM2	$J/\psi \rightarrow \eta_c \gamma$
2956 ± 12 ± 12		BAI	90B MRK3	$J/\psi \rightarrow \gamma K^+ K^- K_S^0 K_L^0$
2982.6 ± 2.7	12	BAGLIN	87B SPEC	$\bar{p}p \rightarrow \gamma\gamma$
2980.2 ± 1.6		⁴ BALTRUSAIT...	86 MRK3	$J/\psi \rightarrow \eta_c \gamma$
2976 ± 8		⁹ BALTRUSAIT...	84 MRK3	$J/\psi \rightarrow 2\phi\gamma$
2982 ± 8	18	¹⁰ HIMEL	80B MRK2	$e^+ e^-$
2980 ± 9		¹⁰ PARTRIDGE	80B CBAL	$e^+ e^-$

¹ From a fit of the J/ψ recoil mass spectrum. Supersedes ABE, K 02 and ABE 04G.

² Using mass of $\psi(2S) = 3686.00$ MeV.

³ From a simultaneous fit of five decay modes of the η_c .

⁴ Average of several decay modes.

⁵ Using an η_c width of 13.2 MeV.

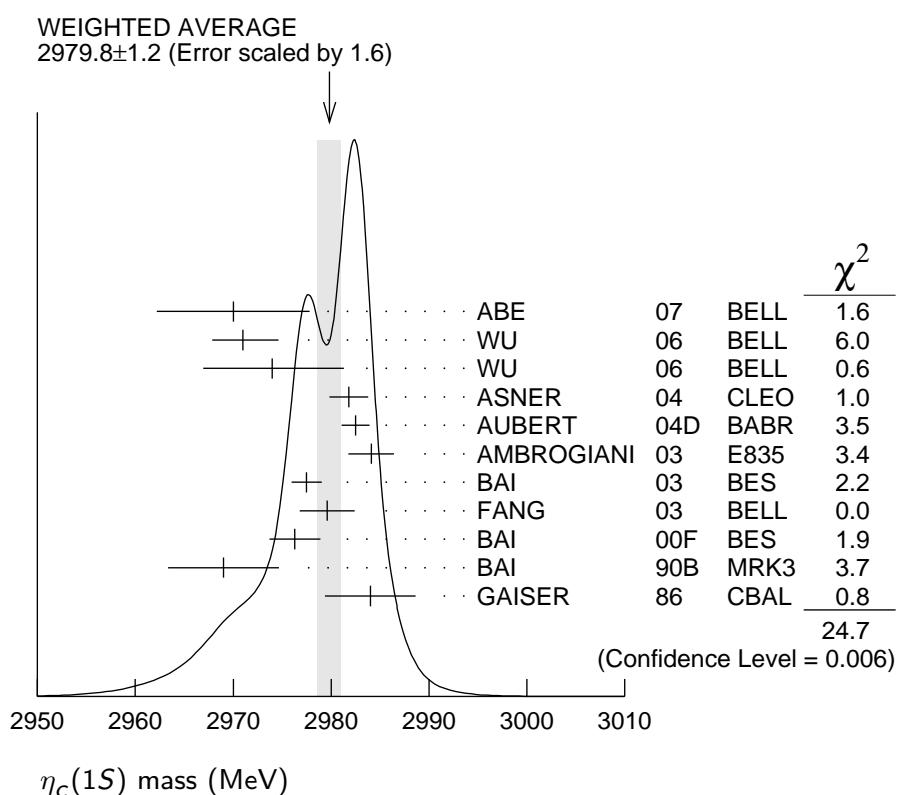
⁶ Weighted average of the $\psi(2S)$ and $J/\psi(1S)$ samples.

⁷ From the fit of the kaon momentum spectrum. Systematic errors not evaluated.

⁸ Superseded by ASNER 04.

⁹ $\eta_c \rightarrow \phi\phi$.

¹⁰ Mass adjusted by us to correspond to $J/\psi(1S)$ mass = 3097 MeV.



eta_c(1S) WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
26.5± 3.5 OUR AVERAGE	Error includes scale factor of 2.1. See the ideogram below.				
48 + 8 - 7 ± 5		195	WU	06 BELL	$B^+ \rightarrow p\bar{p}K^+$
40 ± 19 ± 5		20	WU	06 BELL	$B^+ \rightarrow \Lambda\bar{\Lambda}K^+$
24.8± 3.4±3.5		592	ASNER	04 CLEO	$\gamma\gamma \rightarrow \eta_c \rightarrow K_S^0 K^\pm \pi^\mp$
34.3± 2.3±0.9		2547 ± 90	AUBERT	04D BABR	$\gamma\gamma \rightarrow \eta_c(1S) \rightarrow K\bar{K}\pi$
20.4 + 7.7 - 6.7 ± 2.0		190	AMBROGIANI	03 E835	$\bar{p}p \rightarrow \eta_c \rightarrow \gamma\gamma$
17.0± 3.7±7.4		11	BAI	03 BES	$J/\psi \rightarrow \gamma\eta_c$
29 ± 8 ± 6		182 ± 25	FANG	03 BELL	$B \rightarrow \eta_c K$
11.0± 8.1±4.1		12	BAI	00F BES	$J/\psi \rightarrow \gamma\eta_c$ and $\psi(2S) \rightarrow \gamma\eta_c$
23.9 + 12.6 - 7.1			ARMSTRONG	95F E760	$\bar{p}p \rightarrow \gamma\gamma$

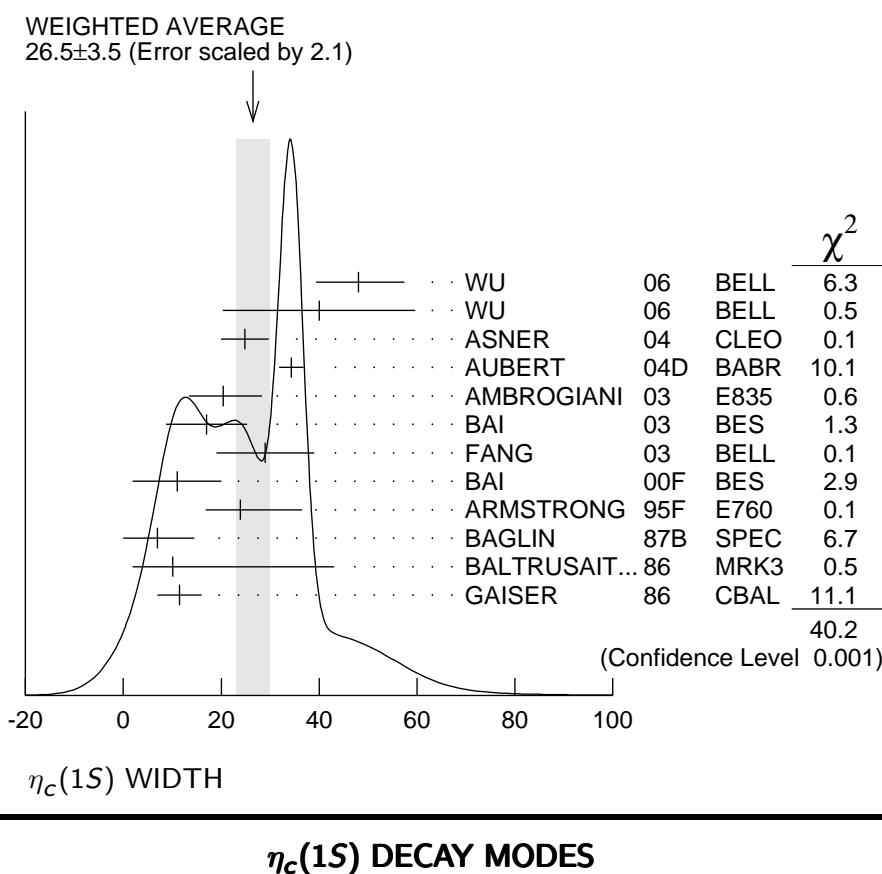
7.0 ± 7.5	12	BAGLIN	87B SPEC	$\bar{p}p \rightarrow \gamma\gamma$
10.1 ± 33.0	23	¹³ BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \gamma p\bar{p}$
11.5 ± 4.5		GAISER	86 CBAL	$J/\psi \rightarrow \gamma X$, $\psi(2S) \rightarrow \gamma X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$27.0 \pm 5.8 \pm 1.4$		¹⁴ BRANDENB...	00B CLE2	$\gamma\gamma \rightarrow \eta_c \rightarrow K^\pm K_S^0 \pi^\mp$
< 40	90	18 HIMEL	80B MRK2	$e^+ e^-$
< 20	90	PARTRIDGE	80B CBAL	$e^+ e^-$

¹¹ From a simultaneous fit of five decay modes of the η_c .

¹² From a fit to the 4-prong invariant mass in $\psi(2S) \rightarrow \gamma\eta_c$ and $J/\psi(1S) \rightarrow \gamma\eta_c$ decays.

¹³ Positive and negative errors correspond to 90% confidence level.

¹⁴ Superseded by ASNER 04.



Mode	Fraction (Γ_i/Γ)	Confidence level

Decays involving hadronic resonances

Γ_1	$\eta'(958)\pi\pi$	(4.1 ± 1.7) %	
Γ_2	$\rho\rho$	(2.0 ± 0.7) %	
Γ_3	$K^*(892)^0 K^- \pi^+ + \text{c.c.}$	(2.0 ± 0.7) %	
Γ_4	$K^*(892) \bar{K}^*(892)$	(9.2 ± 3.4) $\times 10^{-3}$	
Γ_5	$K^{*0} \bar{K}^{*0} \pi^+ \pi^-$	(1.5 ± 0.8) %	
Γ_6	$\phi K^+ K^-$	(2.9 ± 1.4) $\times 10^{-3}$	
Γ_7	$\phi\phi$	(2.7 ± 0.9) $\times 10^{-3}$	
Γ_8	$\phi 2(\pi^+ \pi^-)$	< 4.7 $\times 10^{-3}$	90%
Γ_9	$a_0(980)\pi$	< 2 %	90%
Γ_{10}	$a_2(1320)\pi$	< 2 %	90%
Γ_{11}	$K^*(892) \bar{K}^+ + \text{c.c.}$	< 1.28 %	90%
Γ_{12}	$f_2(1270)\eta$	< 1.1 %	90%
Γ_{13}	$\omega\omega$	< 3.1 $\times 10^{-3}$	90%
Γ_{14}	$\omega\phi$	< 1.7 $\times 10^{-3}$	90%
Γ_{15}	$f_2(1270)f_2(1270)$	(1.0 $^{+0.4}_{-0.5}$) %	

Decays into stable hadrons

Γ_{16}	$K\bar{K}\pi$	(7.0 ± 1.2) %	
Γ_{17}	$\eta\pi\pi$	(4.9 ± 1.8) %	
Γ_{18}	$\pi^+\pi^- K^+ K^-$	(1.5 ± 0.6) %	
Γ_{19}	$K^+ K^- 2(\pi^+ \pi^-)$	(10 ± 4) $\times 10^{-3}$	
Γ_{20}	$2(K^+ K^-)$	(1.5 ± 0.7) $\times 10^{-3}$	
Γ_{21}	$2(\pi^+ \pi^-)$	(1.20 ± 0.30) %	
Γ_{22}	$3(\pi^+ \pi^-)$	(2.0 ± 0.7) %	
Γ_{23}	$p\bar{p}$	(1.3 ± 0.4) $\times 10^{-3}$	
Γ_{24}	$\Lambda\bar{\Lambda}$	(1.04 ± 0.31) $\times 10^{-3}$	
Γ_{25}	$K\bar{K}\eta$	< 3.1 %	90%
Γ_{26}	$\pi^+\pi^- p\bar{p}$	< 1.2 %	90%

Radiative decays

Γ_{27}	$\gamma\gamma$	(2.7 ± 0.9) $\times 10^{-4}$	
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Charge conjugation (C), Parity (P), Lepton family number (LF) violating modes

Γ_{28}	$\pi^+\pi^-$	$P, CP < 8.7 \times 10^{-4}$	90%
Γ_{29}	$\pi^0\pi^0$	$P, CP < 5.6 \times 10^{-4}$	90%
Γ_{30}	$K^+ K^-$	$P, CP < 7.6 \times 10^{-4}$	90%
Γ_{31}	$K_S^0 K_S^0$	$P, CP < 4.2 \times 10^{-4}$	90%

$\eta_c(1S)$ PARTIAL WIDTHS **$\Gamma(\gamma\gamma)$** **Γ_{27}**

VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT
$7.2 \pm 0.7 \pm 2.0$ OUR EVALUATION	Error includes scale factor of 1.3. Treating systematic errors as correlated.			

 6.7 ± 0.9 OUR AVERAGE

$5.5 \pm 1.2 \pm 1.8$	157 ± 33	¹⁵ KUO	05 BELL	$\gamma\gamma \rightarrow p\bar{p}$
$7.4 \pm 0.4 \pm 2.3$		¹⁶ ASNER	04 CLEO	$\gamma\gamma \rightarrow \eta_c \rightarrow K_S^0 K^\pm \pi^\mp$
$13.9 \pm 2.0 \pm 3.0$	41	¹⁷ ABDALLAH	03J DLPH	$\gamma\gamma \rightarrow \eta_c$
$3.8 \pm 1.1 \pm 1.9$	190	¹⁸ AMBROGIANI	03 E835	$\bar{p}p \rightarrow \eta_c \rightarrow \gamma\gamma$
$6.9 \pm 1.7 \pm 2.1$	76	¹⁹ ACCIARRI	99T L3	$e^+ e^- \rightarrow e^+ e^- \eta_c$
$27 \pm 16 \pm 10$	5	¹⁶ SHIRAI	98 AMY	$58 e^+ e^-$
$6.7 \pm 2.4 \pm 2.3$		¹⁵ ARMSTRONG	95F E760	$\bar{p}p \rightarrow \gamma\gamma$
11.3 ± 4.2		²⁰ ALBRECHT	94H ARG	$e^+ e^- \rightarrow e^+ e^- \eta_c$
$5.9 \pm 2.1 \pm 1.9$		¹⁸ CHEN	90B CLEO	$e^+ e^- \rightarrow e^+ e^- \eta_c$
6.4 ± 5.0		²¹ AIHARA	88D TPC	$e^+ e^- \rightarrow e^+ e^- X$
$4.3 \pm 3.4 \pm 2.4$		¹⁵ BAGLIN	87B SPEC	$\bar{p}p \rightarrow \gamma\gamma$
28 ± 15		^{16,22} BERGER	86 PLUT	$\gamma\gamma \rightarrow K\bar{K}\pi$

• • • We do not use the following data for averages, fits, limits, etc. • • •

5.2 ± 1.2	273 ± 43	^{23,24} AUBERT	06E BABR	$B^\pm \rightarrow K^\pm X_c \bar{c}$
$7.6 \pm 0.8 \pm 2.3$		^{16,25} BRANDENB...	00B CLE2	$\gamma\gamma \rightarrow \eta_c \rightarrow K^\pm K_S^0 \pi^\mp$
$8.0 \pm 2.3 \pm 2.4$	17	²⁶ ADRIANI	93N L3	$e^+ e^- \rightarrow e^+ e^- \eta_c$

¹⁵ Normalized to $B(\eta_c \rightarrow p\bar{p}) = (1.3 \pm 0.4) \times 10^{-3}$.¹⁶ Normalized to $B(\eta_c \rightarrow K^\pm K_S^0 \pi^\mp)$.¹⁷ Average of $K_S^0 K^\pm \pi^\mp$, $\pi^+ \pi^- K^+ K^-$, and $2(K^+ K^-)$ decay modes.¹⁸ Normalized to the sum of $B(\eta_c \rightarrow K^\pm K_S^0 \pi^\mp)$, $B(\eta_c \rightarrow K^+ K^- \pi^+ \pi^-)$, and $B(\eta_c \rightarrow 2\pi^+ 2\pi^-)$.¹⁹ Normalized to the sum of 9 branching ratios.²⁰ Normalized to the sum of $B(\eta_c \rightarrow K^\pm K_S^0 \pi^\mp)$, $B(\eta_c \rightarrow \phi\phi)$, $B(\eta_c \rightarrow K^+ K^- \pi^+ \pi^-)$, and $B(\eta_c \rightarrow 2\pi^+ 2\pi^-)$.²¹ Normalized to the sum of $B(\eta_c \rightarrow K^\pm K_S^0 \pi^\mp)$, $B(\eta_c \rightarrow 2K^+ 2K^-)$, $B(\eta_c \rightarrow K^+ K^- \pi^+ \pi^-)$, and $B(\eta_c \rightarrow 2\pi^+ 2\pi^-)$.²² Re-evaluated by AIHARA 88D.²³ Calculated by us using $\Gamma(\eta_c \rightarrow K\bar{K}\pi) \times \Gamma(\eta_c \rightarrow \gamma\gamma) / \Gamma = 0.44 \pm 0.05$ keV from PDG 06 and $B(\eta_c \rightarrow K\bar{K}\pi) = (8.5 \pm 1.8)\%$ from AUBERT 06E.²⁴ Systematic errors not evaluated.²⁵ Superseded by ASNER 04.²⁶ Superseded by ACCIARRI 99T.

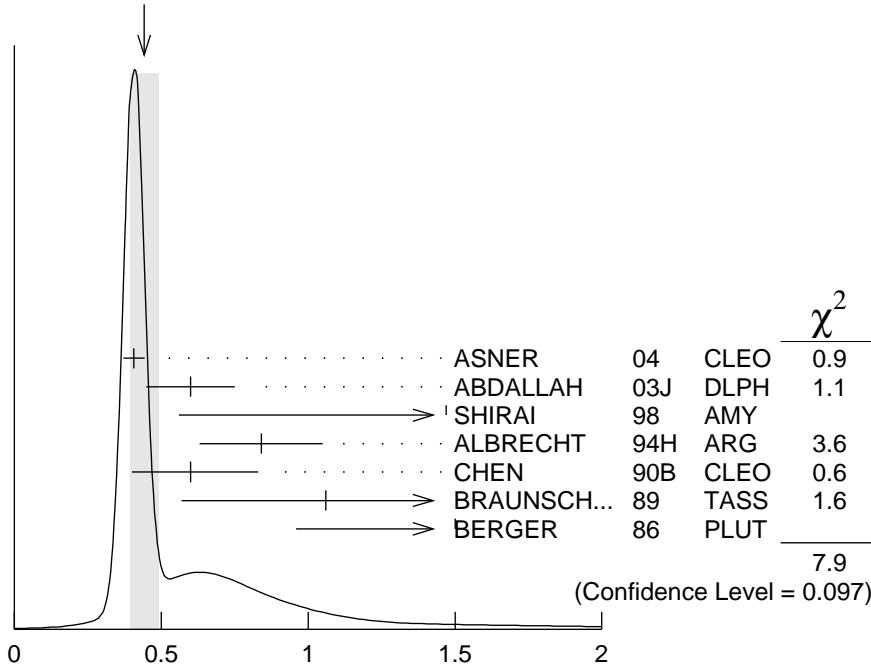
$\eta_c(1S) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(K\bar{K}\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$

$\Gamma_{16}\Gamma_{27}/\Gamma$

VALUE (keV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT		
0.44 ± 0.05 OUR AVERAGE			Error includes scale factor of 1.4. See the ideogram below.				
0.407 ± 0.022 ± 0.028		27,28	ASNER	04	CLEO	$\gamma\gamma \rightarrow \eta_c \rightarrow K_S^0 K^\pm \pi^\mp$	
0.60 ± 0.12 ± 0.09	41	28,29	ABDALLAH	03J	DLPH	$\gamma\gamma \rightarrow K_S^0 K^\pm \pi^\mp$	
1.47 ± 0.87 ± 0.27		28	SHIRAI	98	AMY	$\gamma\gamma \rightarrow \eta_c \rightarrow K^\pm K_S^0 \pi^\mp$	
0.84 ± 0.21		28	ALBRECHT	94H	ARG	$\gamma\gamma \rightarrow K^\pm K_S^0 \pi^\mp$	
0.60 + 0.23 - 0.20		28	CHEN	90B	CLEO	$\gamma\gamma \rightarrow \eta_c K^\pm K_S^0 \pi^\mp$	
1.06 ± 0.41 ± 0.27	11	28	BRAUNSCH...	89	TASS	$\gamma\gamma \rightarrow K\bar{K}\pi$	
1.5 + 0.60 - 0.45	7	28	BERGER	86	PLUT	$\gamma\gamma \rightarrow K\bar{K}\pi$	
• • • We do not use the following data for averages, fits, limits, etc. • • •							
0.418 ± 0.044 ± 0.022		28,30	BRANDENB...	00B	CLE2	$\gamma\gamma \rightarrow \eta_c \rightarrow K^\pm K_S^0 \pi^\mp$	
<0.63	95	28	BEHREND	89	CELL	$\gamma\gamma \rightarrow K_S^0 K^\pm \pi^\mp$	
<4.4	95		ALTHOFF	85B	TASS	$\gamma\gamma \rightarrow K\bar{K}\pi$	

WEIGHTED AVERAGE
0.44±0.05 (Error scaled by 1.4)



$$\Gamma(K\bar{K}\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$$

$$\Gamma_{16}\Gamma_{27}/\Gamma$$

$\Gamma(\pi^+\pi^-K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_{18}\Gamma_{27}/\Gamma$			
<u>VALUE (keV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.21 ± 0.07 OUR AVERAGE				
0.28 ± 0.10 ± 0.06	42	31 ABDALLAH	03J DLPH	$\gamma\gamma \rightarrow \pi^+\pi^-K^+K^-$
0.17 ± 0.08 ± 0.02	13.9 ± 6.6	ALBRECHT	94H ARG	$\gamma\gamma \rightarrow \pi^+\pi^-K^+K^-$
$\Gamma(2(K^+K^-)) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_{20}\Gamma_{27}/\Gamma$			
<u>VALUE (keV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.28 ± 0.07 OUR AVERAGE				
0.35 ± 0.09 ± 0.06	46	32 ABDALLAH	03J DLPH	$\gamma\gamma \rightarrow 2(K^+K^-)$
0.231 ± 0.090 ± 0.023	9.1 ± 3.3	33 ALBRECHT	94H ARG	$\gamma\gamma \rightarrow 2(K^+K^-)$
$\Gamma(2(\pi^+\pi^-)) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_{21}\Gamma_{27}/\Gamma$			
<u>VALUE (keV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.18 ± 0.07 ± 0.02	21.4 ± 8.6	ALBRECHT	94H ARG	$\gamma\gamma \rightarrow 2(\pi^+\pi^-)$
$\Gamma(p\bar{p}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_{23}\Gamma_{27}/\Gamma$			
<u>VALUE (eV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
6.2 +1.1 -1.0 OUR AVERAGE	Error includes scale factor of 1.1.			
7.20 ± 1.53 ^{+0.67} _{-0.75}	157 ± 33	34 KUO	05 BELL	$\gamma\gamma \rightarrow p\bar{p}$
4.6 ^{+1.3} _{-1.1} ± 0.4	190	34 AMBROGIANI	03 E835	$\bar{p}p \rightarrow \gamma\gamma$
8.1 ^{+2.9} _{-2.0}		34 ARMSTRONG	95F E760	$\bar{p}p \rightarrow \gamma\gamma$
27 Calculated by us from the value reported in ASNER 04 that assumes $B(\eta_c \rightarrow K\bar{K}\pi) = 5.5 \pm 1.7\%$				
28 We have multiplied $K^\pm K_S^0 \pi^\mp$ measurement by 3 to obtain $K\bar{K}\pi$.				
29 Calculated by us from the value reported in ABDALLAH 03J, which uses $B(\eta_c \rightarrow K_S^0 K^\pm \pi^\mp) = (1.5 \pm 0.4)\%$.				
30 Superseded by ASNER 04.				
31 Calculated by us from the value reported in ABDALLAH 03J, which uses $B(\eta_c \rightarrow \pi^+\pi^-K^+K^-) = (2.0 \pm 0.7)\%$.				
32 Calculated by us from the value reported in ABDALLAH 03J, which uses $B(\eta_c \rightarrow 2(K^+K^-)) = (2.1 \pm 1.2)\%$.				
33 Includes all topological modes except $\eta_c \rightarrow \phi\phi$.				
34 Not independent from the $\Gamma_{\gamma\gamma}$ reported by the same experiment.				

$\eta_c(1S)$ BRANCHING RATIOS

— HADRONIC DECAYS —

$\Gamma(\eta'(958)\pi\pi)/\Gamma_{\text{total}}$	Γ_1/Γ			
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.041 ± 0.017	14	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c\gamma$

$\Gamma(\rho\rho)/\Gamma_{\text{total}}$

Γ_2/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT		
20 \pm 7 OUR EVALUATION			(Treating systematic errors as correlated.)				
18 \pm 5 OUR AVERAGE							
12.6 \pm 3.8 \pm 5.1		72	35 ABLIKIM	05L BES2	$J/\psi \rightarrow \pi^+ \pi^- \pi^+ \pi^- \gamma$		
26.0 \pm 2.4 \pm 8.8		113	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma \rho^0 \rho^0$		
23.6 \pm 10.6 \pm 8.2		32	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma \rho^+ \rho^-$		
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$							
<14		90	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$		

$\Gamma(K^*(892)^0 K^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}}$

Γ_3/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.02 \pm 0.007	63	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$

$\Gamma(K^*(892)\bar{K}^*(892))/\Gamma_{\text{total}}$

Γ_4/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT	
92 \pm 34 OUR EVALUATION		(Treating systematic errors as correlated.)			
91 \pm 26 OUR AVERAGE					
108 \pm 25 \pm 44	60	35 ABLIKIM	05L BES2	$J/\psi \rightarrow K^+ K^- \pi^+ \pi^- \gamma$	
82 \pm 28 \pm 27	14	35 BISELLO	91 DM2	$e^+ e^- \rightarrow \gamma K^+ K^- \pi^+ \pi^-$	
90 \pm 50	9	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$	

$\Gamma(K^{*0}\bar{K}^{*0} \pi^+ \pi^-)/\Gamma_{\text{total}}$

Γ_5/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
150. \pm 63. \pm 43.	45	36 ABLIKIM	06A BES2	$J/\psi \rightarrow K^{*0}\bar{K}^{*0} \pi^+ \pi^- \gamma$

$\Gamma(\phi K^+ K^-)/\Gamma_{\text{total}}$

Γ_6/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
2.9 \pm 0.9 \pm 1.1	14.1 \pm 4.4 \pm 3.7	37 HUANG	03 BELL	$B^+ \rightarrow (\phi K^+ K^-) K^+$

$\Gamma(\phi\phi)/\Gamma_{\text{total}}$

Γ_7/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT	
27 \pm 9 OUR EVALUATION		(Treating systematic errors as correlated.)			
27 \pm 5 OUR AVERAGE					
25.3 \pm 5.1 \pm 9.1	72	35 ABLIKIM	05L BES2	$J/\psi \rightarrow K^+ K^- K^+ K^- \gamma$	
26 \pm 9	357 \pm 64	35 BAI	04 BES	$J/\psi \rightarrow \gamma K^+ K^- K^+ K^-$	
18 \pm 8 \pm 7	7.0 \pm 3.0 \pm 2.3	37 HUANG	03 BELL	$B^+ \rightarrow (\phi\phi) K^+$	
31 \pm 7 \pm 10	19	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma K^+ K^- K^+ K^-$	
30 \pm 18 \pm 10	5	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma K^+ K^- K_S^0 K_L^0$	
74 \pm 18 \pm 24	80	35 BAI	90B MRK3	$J/\psi \rightarrow \gamma K^+ K^- K^+ K^-$	
67 \pm 21 \pm 24		35 BAI	90B MRK3	$J/\psi \rightarrow \gamma K^+ K^- K_S^0 K_L^0$	

$\Gamma(\phi 2(\pi^+ \pi^-))/\Gamma_{\text{total}}$

<u>VALUE</u> (units 10^{-4})	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<50	90	38 ABLIKIM	06A BES2	$J/\psi \rightarrow \phi 2(\pi^+ \pi^-)\gamma$

Γ_8/Γ

$\Gamma(a_0(980)\pi)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.02	90	35,39 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$

Γ_9/Γ

$\Gamma(a_2(1320)\pi)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.02	90	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$

Γ_{10}/Γ

$\Gamma(K^*(892)\bar{K} + \text{c.c.})/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.0128	90	BISELLO	91 DM2	$J/\psi \rightarrow \gamma K_S^0 K^\pm \pi^\mp$
<0.0132	90	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma K^+ K^- \pi^0$

Γ_{11}/Γ

$\Gamma(f_2(1270)\eta)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.011	90	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$

Γ_{12}/Γ

$\Gamma(\omega\omega)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.0031	90	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.0063	90	35 ABLIKIM	05L BES2	$J/\psi \rightarrow \pi^+ \pi^- \pi^0 \pi^+ \pi^- \pi^0 \gamma$
<0.0063		35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma \omega \omega$

Γ_{13}/Γ

$\Gamma(\omega\phi)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.0017	90	35 ABLIKIM	05L BES2	$J/\psi \rightarrow \pi^+ \pi^- \pi^0 K^+ K^- \gamma$

Γ_{14}/Γ

$\Gamma(f_2(1270)f_2(1270))/\Gamma_{\text{total}}$

<u>VALUE</u> (units 10^{-2})	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
$1.02^{+0.33}_{-0.39} \pm 0.29$	91.2 ± 19.8	40 ABLIKIM	04M BES	$J/\psi \rightarrow \gamma 2\pi^+ 2\pi^-$

Γ_{15}/Γ

$\Gamma(K\bar{K}\pi)/\Gamma_{\text{total}}$

<u>VALUE</u> (units 10^{-2})	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
7.0 ± 1.2 OUR EVALUATION			(Treating systematic errors as correlated.)		
6.1 ± 0.8 OUR AVERAGE					
8.5 ± 1.8			41 AUBERT	06E BABR	$B^\pm \rightarrow K^\pm X_{c\bar{c}}$
5.1 ± 2.1		609 ± 71	35 BAI	04 BES	$J/\psi \rightarrow \gamma K^\pm \pi^\mp K_S^0$
$6.90 \pm 1.42 \pm 1.32$		33	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma K^+ K^- \pi^0$

Γ_{16}/Γ

$5.43 \pm 0.94 \pm 0.94$	68	³⁵ BISELLO	91	DM2	$J/\psi \rightarrow \gamma K^\pm \pi^\mp K_S^0$
4.8 ± 1.7	95	^{35,42} BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$	
$16.1 \begin{array}{l} +9.2 \\ -7.3 \end{array}$	43	HIMEL	80B	MRK2	$\psi(2S) \rightarrow \eta_c \gamma$
< 10.7	90	35 PARTRIDGE	80B	CBAL	$J/\psi \rightarrow \eta_c \gamma$
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$					

$\Gamma(\phi\phi)/\Gamma(K\bar{K}\pi)$

VALUE	DOCUMENT ID	TECN	COMMENT	Γ_7/Γ_{16}
$0.055 \pm 0.014 \pm 0.005$	AUBERT,B	04B	$B^\pm \rightarrow K^\pm \eta_c$	

$\Gamma(\eta\pi\pi)/\Gamma_{\text{total}}$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	Γ_{17}/Γ
0.049 ± 0.018 OUR EVALUATION					
0.047 ± 0.015 OUR AVERAGE					
0.054 ± 0.020	75	³⁵ BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$	
0.037 $\pm 0.013 \pm 0.020$	18	35 PARTRIDGE	80B	CBAL	$J/\psi \rightarrow \eta \pi^+ \pi^- \gamma$

$\Gamma(\pi^+\pi^-K^+K^-)/\Gamma_{\text{total}}$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	Γ_{18}/Γ
0.015 ± 0.006 OUR EVALUATION					
0.0142 ± 0.0033 OUR AVERAGE					
0.012 ± 0.004	413 ± 54	³⁵ BAI	04	BES	$J/\psi \rightarrow \gamma K^+ K^- \pi^+ \pi^-$
0.021 ± 0.007	110	³⁵ BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$	
0.014 $\begin{array}{l} +0.022 \\ -0.009 \end{array}$		43 HIMEL	80B	MRK2	$\psi(2S) \rightarrow \eta_c \gamma$

$\Gamma(K^+K^-2(\pi^+\pi^-))/\Gamma_{\text{total}}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT	Γ_{19}/Γ
$95. \pm 31. \pm 27.$	100	44 ABLIKIM	06A	BES2	$J/\psi \rightarrow K^+ K^- 2(\pi^+ \pi^-) \gamma$

$\Gamma(2(K^+K^-))/\Gamma_{\text{total}}$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	Γ_{20}/Γ
0.0015 ± 0.0007 OUR AVERAGE					
0.0014 $\begin{array}{l} +0.0005 \\ -0.0004 \end{array}$	± 0.0006	$14.5 \begin{array}{l} +4.6 \\ -3.0 \end{array}$	37 HUANG	03 BELL	$B^+ \rightarrow 2(K^+ K^-)$
0.021 ± 0.010	± 0.006		45 ALBRECHT	94H ARG	$K^+ \gamma \gamma \rightarrow K^+ K^- K^+ K^-$

$\Gamma(2(K^+K^-))/\Gamma(K\bar{K}\pi)$

VALUE	DOCUMENT ID	TECN	COMMENT	Γ_{20}/Γ_{16}
$0.023 \pm 0.007 \pm 0.006$	AUBERT,B	04B	$B^\pm \rightarrow K^\pm \eta_c$	

$\Gamma(2(\pi^+\pi^-))/\Gamma_{\text{total}}$

<u>VALUE</u> (units 10^{-2})	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{21}/Γ
1.2 ± 0.3 OUR EVALUATION					
1.15±0.26 OUR AVERAGE					
1.0 ± 0.5	542 ± 75	35 BAI	04 BES	$J/\psi \rightarrow \gamma 2(\pi^+\pi^-)$	
$1.05 \pm 0.17 \pm 0.34$	137	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma 2\pi^+ 2\pi^-$	
1.3 ± 0.6	25	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$	
2.0 $^{+1.5}_{-1.0}$		43 HIMEL	80B MRK2	$\psi(2S) \rightarrow \eta_c \gamma$	

$\Gamma(3(\pi^+\pi^-))/\Gamma_{\text{total}}$

<u>VALUE</u> (units 10^{-4})	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{22}/Γ
204.±45.±58.	479	46 ABLIKIM	06A BES2	$J/\psi \rightarrow 3(\pi^+\pi^-)\gamma$	

$\Gamma(p\bar{p})/\Gamma_{\text{total}}$

<u>VALUE</u> (units 10^{-4})	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{23}/Γ
13 ± 4 OUR EVALUATION					
14.0± 2.2 OUR AVERAGE					
15.5 $^{+2.1}_{-2.5}$ ± 2.1	195	47 WU	06 BELL	$B^+ \rightarrow p\bar{p} K^+$	■
15 ± 6	213 ± 33	35 BAI	04 BES	$J/\psi \rightarrow \gamma p\bar{p}$	
10 ± 3 ± 4	18	35 BISELLO	91 DM2	$J/\psi \rightarrow \gamma p\bar{p}$	
11 ± 6	23	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$	
29 $^{+29}_{-15}$		43 HIMEL	80B MRK2	$\psi(2S) \rightarrow \eta_c \gamma$	

$\Gamma(p\bar{p}) \times \Gamma(\phi\phi)/\Gamma_{\text{total}}^2$

<u>VALUE</u> (units 10^{-5})	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$\Gamma_{23}\Gamma_7/\Gamma^2$
4.0$^{+3.5}_{-3.2}$	BAGLIN	89 SPEC	$\bar{p}p \rightarrow K^+ K^- K^+ K^-$	

$\Gamma(\Lambda\bar{\Lambda})/\Gamma_{\text{total}}$

<u>VALUE</u> (units 10^{-4})	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{24}/Γ
10.4$^{+2.9}_{-2.7}$ ± 1.4		20	48 WU	06 BELL	$B^+ \rightarrow \Lambda\bar{\Lambda} K^+$	■

• • • We do not use the following data for averages, fits, limits, etc. • • •

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{24}/Γ_{23}
<20	35 BISELLO	91 DM2	$e^+ e^- \rightarrow \gamma \Lambda\bar{\Lambda}$	

$\Gamma(\Lambda\bar{\Lambda})/\Gamma(p\bar{p})$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{24}/Γ_{23}
0.67$^{+0.19}_{-0.16}$ ± 0.12	49 WU	06 BELL	$B^+ \rightarrow p\bar{p} K^+, \Lambda\bar{\Lambda} K^+$	■

$\Gamma(K\bar{K}\eta)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{25}/Γ
<0.031	90	35 BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \eta_c \gamma$	

$\Gamma(\pi^+\pi^- p\bar{p})/\Gamma_{\text{total}}$	Γ_{26}/Γ			
VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.012	90	HIMEL	80B MRK2	$\psi(2S) \rightarrow \eta_c \gamma$
35 The quoted branching ratios use $B(J/\psi(1S) \rightarrow \gamma \eta_c(1S)) = 0.0127 \pm 0.0036$. Where relevant, the error in this branching ratio is treated as a common systematic in computing averages.				
36 ABLIKIM 06A reports $[B(\eta_c(1S) \rightarrow K^*0 \bar{K}^*0 \pi^+ \pi^-) \times B(J/\psi(1S) \rightarrow \gamma \eta_c(1S))] = (1.91 \pm 0.64 \pm 0.48) \times 10^{-4}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma \eta_c(1S)) = (1.3 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.				
37 Using $B(B^+ \rightarrow \eta_c K^+) = (1.25 \pm 0.12^{+0.10}_{-0.12}) \times 10^{-3}$ from FANG 03 and $B(\eta_c \rightarrow K \bar{K} \pi) = (5.5 \pm 1.7) \times 10^{-2}$.				
38 ABLIKIM 06A reports $[B(\eta_c(1S) \rightarrow \phi 2(\pi^+ \pi^-)) \times B(J/\psi(1S) \rightarrow \gamma \eta_c(1S))] = < 0.603 \times 10^{-4}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma \eta_c(1S)) = 0.013$.				
39 We are assuming $B(a_0(980) \rightarrow \eta \pi) > 0.5$.				
40 ABLIKIM 04M reports $[B(\eta_c(1S) \rightarrow f_2(1270) f_2(1270)) \times B(J/\psi(1S) \rightarrow \gamma \eta_c(1S))] = (1.3 \pm 0.3^{+0.3}_{-0.4}) \times 10^{-4}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma \eta_c(1S)) = (1.3 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.				
41 Determined from the ratio of $B(B^\pm \rightarrow K^\pm \eta_c) B(\eta_c \rightarrow K \bar{K} \pi) = (7.4 \pm 0.5 \pm 0.7) \times 10^{-5}$ reported in AUBERT, B 04B and $B(B^\pm \rightarrow K^\pm \eta_c) = (8.7 \pm 1.5) \times 10^{-3}$ reported in AUBERT 06E.				
42 Average from $K^+ K^- \pi^0$ and $K^\pm K_S^0 \pi^\mp$ decay channels.				
43 Estimated using $B(\psi(2S) \rightarrow \gamma \eta_c(1S)) = 0.0028 \pm 0.0006$.				
44 ABLIKIM 06A reports $[B(\eta_c(1S) \rightarrow K^+ K^- 2(\pi^+ \pi^-)) \times B(J/\psi(1S) \rightarrow \gamma \eta_c(1S))] = (1.21 \pm 0.32 \pm 0.24) \times 10^{-4}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma \eta_c(1S)) = (1.3 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.				
45 Normalized to the sum of $B(\eta_c \rightarrow K^\pm K_S^0 \pi^\mp)$, $B(\eta_c \rightarrow \phi \phi)$, $B(\eta_c \rightarrow K^+ K^- \pi^+ \pi^-)$, and $B(\eta_c \rightarrow 2\pi^+ 2\pi^-)$.				
46 ABLIKIM 06A reports $[B(\eta_c(1S) \rightarrow 3(\pi^+ \pi^-)) \times B(J/\psi(1S) \rightarrow \gamma \eta_c(1S))] = (2.59 \pm 0.32 \pm 0.47) \times 10^{-4}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma \eta_c(1S)) = (1.3 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.				
47 WU 06 reports $[B(\eta_c(1S) \rightarrow p\bar{p}) \times B(B^+ \rightarrow \eta_c K^+)] = (1.42 \pm 0.11^{+0.16}_{-0.20}) \times 10^{-6}$. We divide by our best value $B(B^+ \rightarrow \eta_c K^+) = (9.1 \pm 1.3) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.				
48 WU 06 reports $[B(\eta_c(1S) \rightarrow \Lambda \bar{\Lambda}) \times B(B^+ \rightarrow \eta_c K^+)] = (0.95^{+0.25}_{-0.22}{}^{+0.08}_{-0.11}) \times 10^{-6}$. We divide by our best value $B(B^+ \rightarrow \eta_c K^+) = (9.1 \pm 1.3) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.				
49 Not independent from other $\eta_c \rightarrow \Lambda \bar{\Lambda}$, $p\bar{p}$ branching ratios reported by WU 06.				

RADIATIVE DECAYS **$\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$**

<u>VALUE</u> (units 10^{-4})	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$2.80^{+0.67}_{-0.58} \pm 1.0$		50 ARMSTRONG 95F	E760	$\bar{p}p \rightarrow \gamma\gamma$
< 9	90	51 BISELLO	91 DM2	$J/\psi \rightarrow \gamma\gamma\gamma$
6 $^{+4}_{-3}$ ± 4		50 BAGLIN	87B SPEC	$\bar{p}p \rightarrow \gamma\gamma$
<18	90	52 BLOOM	83 CBAL	$J/\psi \rightarrow \eta_c\gamma$

50 Not independent from the values of the total and two-photon width quoted by the same experiment.

51 The quoted branching ratios use $B(J/\psi(1S) \rightarrow \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$. Where relevant, the error in this branching ratio is treated as a common systematic in computing averages.

52 Using $B(J/\psi(1S) \rightarrow \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.

 Γ_{27}/Γ **$\Gamma(p\bar{p}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}^2$**

<u>VALUE</u> (units 10^{-6})	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.26 ± 0.05 OUR AVERAGE				Error includes scale factor of 1.4.
0.224 $^{+0.038}_{-0.037} \pm 0.020$	190	AMBROGIANI 03	E835	$\bar{p}p \rightarrow \eta_c \rightarrow \gamma\gamma$
0.336 $^{+0.080}_{-0.070}$		ARMSTRONG 95F	E760	$\bar{p}p \rightarrow \gamma\gamma$
0.68 $^{+0.42}_{-0.31}$	12	BAGLIN	87B SPEC	$\bar{p}p \rightarrow \gamma\gamma$

 $\Gamma_{23}\Gamma_{27}/\Gamma^2$ **Charge conjugation (*C*), Parity (*P*),
Lepton family number (*LF*) violating modes** **$\Gamma(\pi^+\pi^-)/\Gamma_{\text{total}}$**

<u>VALUE</u> (units 10^{-5})	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<90	90	53 ABLIKIM	06B BES2	$J/\psi \rightarrow \pi^+\pi^-\gamma$
53 ABLIKIM 06B reports $[B(\eta_c(1S) \rightarrow \pi^+\pi^-) \times B(J/\psi(1S) \rightarrow \gamma\eta_c(1S))] = < 1.1 \times 10^{-5}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma\eta_c(1S)) = 0.013$.				

 Γ_{28}/Γ **$\Gamma(\pi^0\pi^0)/\Gamma_{\text{total}}$**

<u>VALUE</u> (units 10^{-5})	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<60	90	54 ABLIKIM	06B BES2	$J/\psi \rightarrow \pi^0\pi^0\gamma$
54 ABLIKIM 06B reports $[B(\eta_c(1S) \rightarrow \pi^0\pi^0) \times B(J/\psi(1S) \rightarrow \gamma\eta_c(1S))] = < 0.71 \times 10^{-5}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma\eta_c(1S)) = 0.013$.				

 Γ_{29}/Γ **$\Gamma(K^+K^-)/\Gamma_{\text{total}}$**

<u>VALUE</u> (units 10^{-5})	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<80	90	55 ABLIKIM	06B BES2	$J/\psi \rightarrow K^+K^-\gamma$
55 ABLIKIM 06B reports $[B(\eta_c(1S) \rightarrow K^+K^-) \times B(J/\psi(1S) \rightarrow \gamma\eta_c(1S))] = < 0.96 \times 10^{-5}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma\eta_c(1S)) = 0.013$.				

 Γ_{30}/Γ

$\Gamma(K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{31}/Γ

<u>VALUE (units 10^{-5})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<40	90	56 ABLIKIM	06B BES2	$J/\psi \rightarrow K_S^0 K_S^0 \gamma$
56 ABLIKIM 06B reports $[B(\eta_c(1S) \rightarrow K_S^0 K_S^0) \times B(J/\psi(1S) \rightarrow \gamma \eta_c(1S))] = < 0.53 \times 10^{-5}$. We divide by our best value $B(J/\psi(1S) \rightarrow \gamma \eta_c(1S)) = 0.013$.				

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